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EXAMINER	
WANG, JIN CHENG	
ART UNIT	**PAPER NUMBER**
2672	

DATE MAILED: 12/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/823,935	PETERSON ET AL.	
	Examiner	Art Unit	
	Jin-Cheng Wang	2672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32,41-48,63-86,88 and 91* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32, 41-48, 63-86, 88 and 91* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/21/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/21/2005 has been entered. Claims 33-40, 49-62, 87, 89-90 and 92-97 have been canceled. Claims 1-32, 41-48, 63-86, 88 and 91 are pending in the application.

Response to Arguments

Applicant's arguments and affidavits have been considered, but are not found persuasive for the reasons given below.

The affidavit filed on 11/21/2005 under 37 CFR 1.131 has been considered but is ineffective to overcome the Sato et al. U.S. Pat. No. 6,731,301 reference.

The evidence submitted is insufficient to establish a conception of the invention prior to the effective date of the Sato reference. While conception is the mental part of the inventive act, it must be capable of proof, such as by demonstrative evidence or by a complete disclosure to another. Conception is more than a vague idea of how to solve a problem. The requisite means themselves and their interaction must also be comprehended. See *Mergenthaler v. Scudder*, 1897 C.D. 724, 81 O.G. 1417 (D.C. Cir. 1897). Applicant has not provided proof or evidence as to a draft patent applicant shows the claimed invention. Moreover, the claims have been

amended after applicant's effective filing date and it cannot be established as to the conception of the claimed invention prior to the Sato's effective filing date since the applicant's later filing patent application, while incorporating additional materials including the comments of the applicants after March 26, may be substantially different from the final version of the patent application which has the later filing date than the prior art's effective date of filing. It thus cannot be determined that applicant's draft patent applicant supports the amended claims as recited in claim 1 and similar claims. Moreover, conception is the mental part of the inventive act, but it must be capable of proof, as by drawings, complete disclosure to another person, etc. In Mergenthaler v. Scudder, 1897 C.D. 724, 81 O.G. 1417 (D.C. Cir. 1897), it was established that conception is more than a mere vague idea of how to solve a problem; the means themselves and their interaction must be comprehended also.

Applicant's arguments with respect to claims 1-32, 41-48, 63-86, 88 and 91 have been considered but are moot in view of the new ground(s) of rejection based on Sato et al. U.S. Pat. No. 6,731,301.

For example, Sato teaches a method for calculating values for pixels of an image, comprising: calculating four sample values for pixels of an image in accordance with a sampling pattern for each pixel, the sampling pattern for consecutive pixels alternating between a first and a second sampling pattern, wherein the calculation includes calculating a pair of sample values for pixels of an image in accordance with a sampling pattern for each pixel (*Sato teaches sampling patterns for adjacent pixels wherein the sampling patterns alternate between two different patterns selected from the pattern table for a plurality of pixels in an image and calculating four sample values for pixels of an image including calculating a pair of sample*

values for pixels of an image; see Figs. 26, 29, 34, 36, and 38); each sampling pattern defining one or more sampling locations at which sample values are calculated, the sampling locations being relative to a pixel (*e.g., Sato teaches each sampling pattern having sample locations arranged within a 4 by 4 sub-pixel matrix relative to a pixel; Figs. 24-38; col. 2, 4, 8, 11-12; 13-14*); and determining a value for at least one pixel by combining sample values calculated for the sampling locations for the pixel (*e.g., Sato teaches determining the pixel values from the sample locations to avoid anti-aliasing effect; Figs. 24-38; col. 2, 4, 8-10, 11-12; 13-14*). Although Sato discloses four sub-pixel samples for a given pixel, Sato discloses calculating at least a pair of the sample values including calculating at least a pair of sample values among the plurality of sample values. Sato discloses calculating at least a pair of the sample values including calculating a pair of the sample values for two samples. Sato discloses calculating at least a pair of the sample values including calculating a pair of the sample values for the four samples.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-28, 41-48, 63-64, 67-71, 76, 78, 80, 82, 84, 86, 88, 91 are rejected under 35 U.S.C. 102(e) as being anticipated by Sato et al. U.S. Pat. No. 6,731,301 (hereinafter Sato).

3. Claim 1:

(1) Sato teaches a method for calculating values for pixels of an image, comprising:

Calculating four sample values for pixels of an image in accordance with a sampling pattern for each pixel, the sampling pattern for consecutive pixels alternating between a first and a second sampling pattern, wherein the calculation includes calculating a pair of sample values for pixels of an image in accordance with a sampling pattern for each pixel (*Sato teaches sampling patterns for adjacent pixels wherein the sampling patterns alternate between two different patterns selected from the pattern table for a plurality of pixels in an image and calculating four sample values for pixels of an image including calculating a pair of sample values for pixels of an image; see Figs. 26, 29, 34, 36, and 38*); each sampling pattern defining one or more sampling locations at which sample values are calculated, the sampling locations being relative to a pixel (*e.g., Sato teaches each sampling pattern having sample locations arranged within a 4 by 4 sub-pixel matrix relative to a pixel; Figs. 24-38; col. 2, 4, 8, 11-12; 13-14*); and

Determining a value for at least one pixel by combining sample values calculated for the sampling locations for the pixel (*e.g., Sato teaches determining the pixel values from the sample locations to avoid anti-aliasing effect; Figs. 24-38; col. 2, 4, 8-10, 11-12; 13-14*).

Claim 2:

The claim 2 encompasses the same scope of invention as that of claim 1 except additional claimed limitation that each sampling pattern defines two sample locations and calculating

sample values comprises calculating a pair of sample values whenever sample values for a pixel are calculated in accordance with the first or second sampling pattern, the sampling patterns alternating from one pixel to the next.

However, Sato further discloses the claimed limitation that each sampling pattern defines two sample locations and calculating sample values comprises calculating a pair of sample values whenever sample values for a pixel are calculated in accordance with the first or second sampling pattern, the sampling patterns alternating from one pixel to the next (*at least two sampling locations are defined and calculated for each sampling pattern in accordance with the first or second sampling pattern; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 3:

The claim 3 encompasses the same scope of invention as that of claim 2 except additional claimed limitation that the pixels of the image are arranged along rows and columns parallel to first and second perpendicular axes, respectively, and the pair of sample locations per sampling pattern for at least two pixels are arranged along a line parallel to neither axis.

However, Sato further discloses the claimed limitation that the pixels of the image are arranged along rows and columns parallel to first and second perpendicular axes, respectively, and the pair of sample locations per sampling pattern for at least two pixels are arranged along a line parallel to neither axis (*e.g., the horizontal and vertical axes are in parallel with the rows and columns of the pixels and a diagonal line of the 4 by sub-pixel matrix; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 4:

The claim 4 encompasses the same scope of invention as that of claim 2 except additional claimed limitation of calculating a pair of sample values comprises calculating sample values at sample positions arranged according to either a first or second sample pattern, the first sampling pattern having sample positions on opposite sides of a line parallel to a first axis and dividing a respective pixel region in two, and the second sampling pattern having sample positions on opposite sides of a line parallel to a second axis and dividing a respective pixel region in two, the second axis perpendicular to the first axis.

However, Sato further discloses the claimed limitation that calculating sample values at sample positions arranged according to either a first or second sample pattern, the first sampling pattern having sample positions on opposite sides of a line parallel to a first axis and dividing a respective pixel region in two, and the second sampling pattern having sample positions on opposite sides of a line parallel to a second axis and dividing a respective pixel region in two, the second axis perpendicular to the first axis (*the first axis is the x-axis and the second axis is the y-axis. Samples are distributed on the two regions separated by the middle line of the 4 by 4 sub-pixel matrix parallel to the x-axis and the middle line. Samples are also distributed on the two regions separated by the middle line of the 4 by 4 sub-pixel matrix parallel to the y-axis; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 5:

The claim 5 encompasses the same scope of invention as that of claim 4 except additional claimed limitation of the two lines parallel to the respective axes pass through the centers of respective pixels. However, Sato further discloses the claimed limitation that the pixels of the two lines parallel to the respective axes pass through the centers of respective pixels (*the first*

axis is the x-axis and the second axis is the y-axis. Samples are distributed on the two regions separated by the middle line of the 4 by 4 sub-pixel matrix parallel to the x-axis and the middle line. Samples are also distributed on the two regions separated by the middle line of the 4 by 4 sub-pixel matrix parallel to the y-axis; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14).

Claim 6:

The claim 6 encompasses the same scope of invention as that of claim 5 except additional claimed limitation that each sampling pattern has a sample position on each side of both of two lines parallel to respective axes and passing through the center of respective pixels.

However, Sato further discloses the claimed limitation that each sampling pattern has a sample position on each side of both of two lines parallel to respective axes and passing through the center of respective pixels (*the first axis is the x-axis and the second axis is the y-axis. Samples are distributed on the two regions separated by the middle line of the 4 by 4 sub-pixel matrix parallel to the x-axis and the middle line. Samples are also distributed on the two regions separated by the middle line of the 4 by 4 sub-pixel matrix parallel to the y-axis; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 7:

The claim 7 encompasses the same scope of invention as that of claim 1 except additional claimed limitation that calculating sample values comprises calculating four sample values at four respective sample locations within a respective pixel region whenever a sampling pattern is applied to a pixel, each pixel region considered as divided evenly into a four-by-four array of sub-regions and the four sample locations defined for a pixel by any given sampling pattern

arranged within the pixel region in a manner whereby no two sample points defined by the same sampling pattern are located in the same row or column of sub-regions.

However, Sato further discloses the claimed limitation that calculating sample values comprises calculating four sample values at four respective sample locations within a respective pixel region whenever a sampling pattern is applied to a pixel, each pixel region (*e.g., a sub-pixel area in the 4 by 4 sub-pixel matrix constitutes a region*) considered as divided evenly into a four-by-four array of sub-regions and the four sample locations defined for a pixel by any given sampling pattern arranged within the pixel region in a manner whereby no two sample points defined by the same sampling pattern are located in the same row or column of sub-regions (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 8:

The claim 8 encompasses the same scope of invention as that of claim 7 except additional claimed limitation of no two sampling locations of the four defined by a given sampling pattern being located in the same row or column or diagonal of sub-regions.

However, Sato further discloses the claimed limitation of no two sampling locations of the four defined by a given sampling pattern being located in the same row or column or diagonal of sub-regions (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 9:

The claim 9 encompasses the same scope of invention as that of claim 8 except additional claimed limitation of each sampling location lying substantially at the center of a sub-region. However, Sato further discloses the claimed limitation of no two sampling locations of each sampling location lying substantially at the center of a sub-region (*e.g., each sub-pixel sample*

location itself is a sub-region and therefore each sampling location lies at the center of a sub-region; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14).

Claim 10:

The claim 10 encompasses the same scope of invention as that of claim 8 except additional claimed limitation that no two different sampling patterns applied to two different pixels define any two sampling locations which lie in corresponding sub-regions of their respective pixels.

However, Sato further discloses the claimed limitation that no two different sampling patterns applied to two different pixels define any two sampling locations which lie in corresponding sub-regions of their respective pixels (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 11:

The claim 11 encompasses the same scope of invention as that of claim 10 except additional claimed limitation of the sampling patterns alternating per pixel for vertically-consecutive pixels. However, Sato further discloses the claimed limitation of the sampling patterns alternating per pixel for vertically-consecutive pixels (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 12:

The claim 12 encompasses the same scope of invention as that of claim 10 except additional claimed limitation of the sampling patterns alternating per pixel for horizontally-consecutive pixels. However, Sato further discloses the claimed limitation of the sampling

patterns alternating per pixel for horizontally-consecutive pixels (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 13:

The claim 13 encompasses the same scope of invention as that of claim 10 except additional claimed limitation of the sampling patterns alternating per pixel both for horizontally-consecutive pixels and also for vertically-consecutive pixels. However, Sato further discloses the claimed limitation of the sampling patterns alternating per pixel both for horizontally-consecutive pixels and also for vertically-consecutive pixels (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

4. Claim 14:

Sato teaches a method for generating an image having pixels arranged in rows and columns parallel to first and second perpendicular axes, respectively, comprising:

Calculating pairs of sample values for pixels of the image in accordance with a plurality of sampling patterns, one sampling pattern per pixel, one pair of sampling points per sampling pattern (*Sato discloses calculating pairs of sample values for pixels in accordance to the at least two different sampling patterns see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*); and

Calculating a value for at least one pixel of the image from a respective pair or pairs of calculated sample values (*Sato discloses determining the pixel values from the four sample locations for each pixel see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 15:

The claim 15 encompasses the same scope of invention as that of claim 14 except additional claimed limitation that a first sampling pattern defines sample positions relative to a given pixel on opposite sides of a line parallel to a first axis of the image and dividing the respective pixel in two, and a second sampling pattern defines sample positions relative to a given pixel on opposite sides of a line parallel to a second axis of the image and dividing the respective pixel in two.

However, Sato further discloses the claimed limitation of that a first sampling pattern defines sample positions relative to a given pixel on opposite sides of a line parallel to a first axis of the image and dividing the respective pixel in two, and a second sampling pattern defines sample positions relative to a given pixel on opposite sides of a line parallel to a second axis of the image and dividing the respective pixel in two (*the first axis is the x-axis and the second axis is the y-axis. Samples are distributed on the two regions separated by the middle line of the 4 by 4 sub-pixel matrix parallel to the x-axis and the middle line. Samples are also distributed on the two regions separated by the middle line of the 4 by 4 sub-pixel matrix parallel to the y-axis; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 16:

The claim 16 encompasses the same scope of invention as that of claim 15 except additional claimed limitation that the second sampling pattern comprises a sampling pattern substantially corresponding to the first sampling pattern rotated 90 degree.

However, Sato further discloses the claimed limitation that that the second sampling pattern comprises a sampling pattern substantially corresponding to the first sampling pattern rotated 90 degree (*Sato discloses selecting sampling pattern from a plurality of sampling*

patterns from the pattern table at the predetermined condition. Sato further teaches rotating the sampling locations 180 degree. An alternative sampling pattern with sample positions rotated 90 degree from the sampling pattern of the last pixel can be selected for the present pixel from the pattern table; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8-10, 11-12; 13-14).

Claim 17:

The claim 17 encompasses the same scope of invention as that of claim 15 except additional claimed limitation that the sampling patterns alternate per pixel along at least one row or column of pixels.

However, Sato further discloses the claimed limitation that the sampling patterns alternate per pixel along at least one row or column of pixels (*Sato discloses the sampling patterns alternating for adjacent pixels along a row or column of pixels in an image; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 18:

The claim 18 encompasses the same scope of invention as that of claim 15 except additional claimed limitation that each of the two sampling patterns is applied to every other pixel along at least one row or column of pixels, the second sampling pattern substantially corresponding to the first sampling pattern rotated 90 degrees.

However, Sato further discloses the claimed limitation that each of the two sampling patterns is applied to every other pixel along at least one row or column of pixels, the second sampling pattern substantially corresponding to the first sampling pattern rotated 90 degrees (*Sato discloses selecting sampling pattern from a plurality of sampling patterns from the pattern*

table at the predetermined condition. Sato further teaches rotating the sampling locations 180 degree. An alternative sampling pattern with sample positions rotated 90 degree from the sampling pattern of the last pixel can be selected for the present pixel from the pattern table; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8-10, 11-12; 13-14).

Claim 19:

The claim 19 encompasses the same scope of invention as that of claim 15 except additional claimed limitation that the sampling pattern for each consecutive pixel alternates along a row or column of pixels between a given sampling pattern and its 90 degrees-rotated counterpart.

However, Sato further discloses the claimed limitation that the sampling pattern for each consecutive pixel alternates along a row or column of pixels between a given sampling pattern and its 90 degrees-rotated counterpart (*Sato discloses selecting sampling pattern from a plurality of sampling patterns from the pattern table at the predetermined condition. Sato further teaches rotating the sampling locations 180 degree. An alternative sampling pattern with sample positions rotated 90 degree from the sampling pattern of the last pixel can be selected for the present pixel from the pattern table; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8-10, 11-12; 13-14*).

Claim 20:

The claim 20 encompasses the same scope of invention as that of claim 15 except additional claimed limitation that all sampling patterns are considered as dividing the regions of respective pixels into the same four-by-four array of sub-regions and four potential sample positions are arranged within the array in a manner whereby no two potential sample positions

are located in the same row, column, or diagonal of sub-regions, the plurality of sampling patterns comprising first and second sampling patterns, each defining two sampling positions from the four potential sampling positions, the first sampling pattern having sample locations in the first and fourth rows of the array and the second sampling pattern having sample locations in the second and third rows of the array.

However, Sato further discloses the claimed limitation that all sampling patterns are considered as dividing the regions of respective pixels into the same four-by-four array of sub-regions and four potential sample positions are arranged within the array in a manner whereby no two potential sample positions are located in the same row, column, or diagonal of sub-regions, the plurality of sampling patterns comprising first and second sampling patterns, each defining two sampling positions from the four potential sampling positions, the first sampling pattern having sample locations in the first and fourth rows of the array and the second sampling pattern having sample locations in the second and third rows of the array (*the first axis is the x-axis and the second axis is the y-axis. Samples are distributed on the two regions separated by the middle line of the 4 by 4 sub-pixel matrix parallel to the x-axis and the middle line. Samples are also distributed on the two regions separated by the middle line of the 4 by 4 sub-pixel matrix parallel to the y-axis; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 21:

The claim 21 encompasses the same scope of invention as that of claim 14 except additional claimed limitation of the sampling pattern alternating per pixel along at least one row or column of pixels. However, Sato further discloses the claimed limitation of the sampling pattern alternating per pixel along at least one row or column of pixels (*Sato discloses the*

sampling patterns alternating for adjacent pixels along a row or column of pixels in an image; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14).

Claim 22:

The claim 22 encompasses the same scope of invention as that of claim 14 except additional claimed limitation of each of the two sampling patterns being applied to every other pixel along at least one row or column of pixels, the second sampling pattern substantially corresponding to the first sampling pattern rotated 90 degrees. However, Sato further discloses the claimed limitation of each of the two sampling patterns being applied to every other pixel along at least one row or column of pixels, the second sampling pattern substantially corresponding to the first sampling pattern rotated 90 degrees (*Sato discloses selecting sampling pattern from a plurality of sampling patterns from the pattern table at the predetermined condition. Sato further teaches rotating the sampling locations 180 degree. An alternative sampling pattern with sample positions rotated 90 degree from the sampling pattern of the last pixel can be selected for the present pixel from the pattern table; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8-10, 11-12; 13-14*).

5. Claim 23:

(1) Sato teaches a method for calculating values for pixels of an image having the pixels arranged in rows and columns parallel to first and second perpendicular axes, respectively, comprising:

Calculating sample values for pixels of the image in accordance with a plurality of sampling rates, the sampling rate differing for at least two pixels of the image (*Sato discloses in*

Figs. 34-26 the variable sampling rates for pixels along the y-direction and selecting sampling pattern from a plurality of sampling patterns from the pattern table at the predetermined condition. Sato further teaches rotating the sampling locations 180 degree. An alternative sampling pattern with sample positions rotated 90 degree from the sampling pattern of the last pixel can be selected for the present pixel from the pattern table; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8-10, 11-12; 13-14); and

Calculating values for pixels of the image from a respective calculated sample values (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 24:

The claim 24 encompasses the same scope of invention as that of claim 23 except additional claimed limitation of the sampling rate alternating per pixel for consecutive pixels along lines parallel to one or the other axes of the image for at least some of the horizontal or vertical lines of pixels of the image.

However, Sato further discloses the claimed limitation of the sampling rate alternating per pixel for consecutive pixels along lines parallel to one or the other axes of the image for at least some of the horizontal or vertical lines of pixels of the image (*Sato discloses in Figs. 34-26 the variable sampling rates for pixels along the y-direction and selecting sampling pattern from a plurality of sampling patterns from the pattern table at the predetermined condition. Sato further teaches rotating the sampling locations 180 degree. An alternative sampling pattern with sample positions rotated 90 degree from the sampling pattern of the last pixel can be selected for*

the present pixel from the pattern table; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8-10, 11-12; 13-14).

Claim 25:

The claim 25 encompasses the same scope of invention as that of claim 23 except additional claimed limitation of the sampling rate being constant for the pixels arranged along any given line parallel to the first axis and varies among the plurality of sampling rates for the pixels arranged along any given line parallel to the second axis.

However, Sato further discloses the claimed limitation of the sampling rate being constant for the pixels arranged along any given line parallel to the first axis and varies among the plurality of sampling rates for the pixels arranged along any given line parallel to the second axis (*Sato discloses in Figs. 34-26 the variable sampling rates for pixels along the y-direction and selecting sampling pattern from a plurality of sampling patterns from the pattern table at the predetermined condition. Sato further teaches rotating the sampling locations 180 degree. An alternative sampling pattern with sample positions rotated 90 degree from the sampling pattern of the last pixel can be selected for the present pixel from the pattern table; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8-10, 11-12; 13-14*).

Claim 26:

The claim 26 encompasses the same scope of invention as that of claim 25 except additional claimed limitation of the first and second sampling rates alternating per pixel for consecutive pixels in any line parallel to the second axis.

However, Sato further discloses the claimed limitation of the first and second sampling rates alternating per pixel for consecutive pixels in any line parallel to the second axis (*Sato*

discloses in Figs. 34-26 the variable sampling rates for pixels along the y-direction and selecting sampling pattern from a plurality of sampling patterns from the pattern table at the predetermined condition. Sato further teaches rotating the sampling locations 180 degree. An alternative sampling pattern with sample positions rotated 90 degree from the sampling pattern of the last pixel can be selected for the present pixel from the pattern table; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8-10, 11-12; 13-14).

6. Claim 27:

(1) Sato teaches a method for calculating values for pixels of an image having the pixels arranged in rows and columns parallel to first and second perpendicular axes, respectively, comprising:

Calculating sample values for pixels of the image in accordance with first and second sampling rates, the sampling rate remaining constant for consecutive pixels arranged along any one given line parallel to the first axis and varying between the first and second sampling rates for consecutive pixels arranged along any one given line parallel to the second axis (*Sato discloses in Figs. 34-26 the variable sampling rates for pixels along the y-direction and selecting sampling pattern from a plurality of sampling patterns from the pattern table at the predetermined condition. Sato further teaches rotating the sampling locations 180 degree. An alternative sampling pattern with sample positions rotated 90 degree from the sampling pattern of the last pixel can be selected for the present pixel from the pattern table; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8-10, 11-12; 13-14*); and

Calculating values for pixels of the image from a respective calculated sample values (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 28:

The claim 28 encompasses the same scope of invention as that of claim 27 except additional claimed limitation of the pixels of the image being arranged in rows parallel to the first axis and columns parallel to the second axis, and the first and second sampling rates alternating every row of pixels. However, Sato further discloses the claimed limitation of the pixels of the image being arranged in rows parallel to the first axis and columns parallel to the second axis, and the first and second sampling rates alternating every row of pixels (*Sato discloses in Figs. 34-26 the variable sampling rates for pixels along the y-direction and selecting sampling pattern from a plurality of sampling patterns from the pattern table at the predetermined condition. Sato further teaches rotating the sampling locations 180 degree. An alternative sampling pattern with sample positions rotated 90 degree from the sampling pattern of the last pixel can be selected for the present pixel from the pattern table; see Figs. 26, 29, 34-36, and 38; col. 2, 4, 8-10, 11-12; 13-14*).

Claim 41:

Sato teaches a method for calculating values for pixels of an image having its pixels arranged in rows and columns parallel to first and second perpendicular axes, respectively, comprising:

Calculating sample values for pixels of the image in accordance with one or more sample patterns, the region of potential sampling locations relative to a pixel considered as divided evenly into a four-by-four array of sub-regions each sampling pattern having at least two sample locations relative to a pixel, each sample location located at one of four candidate sampling locations, and the candidate sampling locations arranged in a manner whereby no two of the four candidate sample locations for a given sampling pattern are located along the same row, column, or diagonal of sub-regions, at least one sampling pattern including at least one other sampling location not located in one of the candidate sampling locations, no more than seven sub-regions containing any sampling location (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*); and

Calculating values for pixels of the image from sample values calculated from respective pixels (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

7. Claim 42:

Sato teaches a method for calculating values for pixels of an image having its pixels arranged in rows and columns parallel to first and second perpendicular axes, respectively, comprising:

Calculating sample values for pixels of the image in accordance with a sample pattern, the region of potential sampling locations relative to a pixel considered as divided evenly into a four-by-four array of sub-regions, the sampling pattern having two sample locations relative to a pixel, each sample location located at one of four candidate sampling locations, and the candidate sampling locations arranged in a manner whereby no two of the four candidate sample

locations for a given sampling pattern are located along the same row, column, or diagonal of sub-regions (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*); and

Calculating values for pixels of the image from sample values calculated from respective pixels (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 43:

The claim 43 encompasses the same scope of invention as that of claim 42 except additional claimed limitation of the two sample locations located in the first and fourth rows of the array of sub-regions.

However, Sato further discloses the claimed limitation of the two sample locations located in the first and fourth rows of the array of sub-regions (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 44:

The claim 44 encompasses the same scope of invention as that of claim 43 except additional claimed limitation of the two sample locations located substantially at the center of respective sub-regions. However, Sato further discloses the claimed limitation of the two sample locations located substantially at the center of respective sub-regions (*e.g., each sub-pixel sample area forms a sub-region and therefore each sampling location lies at the center of a sub-region; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 45:

The claim 45 encompasses the same scope of invention as that of claim 43 except additional claimed limitation of the two sample locations located at the center of respective sub-

regions. However, Sato further discloses the claimed limitation of the two sample locations located at the center of respective sub-regions (*e.g., each sub-pixel sample area forms a sub-region and therefore each sampling location lies at the center of a sub-region; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 46:

The claim 46 encompasses the same scope of invention as that of claim 42 except additional claimed limitation of the two sample locations located in the second and third rows of the array of sub-regions. However, Sato further discloses the claimed limitation of the two sample locations located in the second and third rows of the array of sub-regions (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 47:

The claim 47 encompasses the same scope of invention as that of claim 446 except additional claimed limitation of the two sample locations located substantially at the center of respective sub-regions. However, Sato further discloses the claimed limitation of the two sample locations located substantially at the center of respective sub-regions (*e.g., each sub-pixel sample area forms a sub-region and therefore each sampling location lies at the center of a sub-region; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 48:

The claim 48 encompasses the same scope of invention as that of claim 46 except additional claimed limitation of the two sample locations located at the center of respective sub-regions. However, Sato further discloses the claimed limitation of the two sample locations located at the center of respective sub-regions (*e.g., each sub-pixel sample area forms a sub-*

region and therefore each sampling location lies at the center of a sub-region; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14).

8. Claim 63:

(1) Sato teaches a method for calculating values for pixels of an image having pixels arranged in rows and columns parallel to first and second perpendicular axes, respectively, comprising:

Calculating sample values for pixels of the image in accordance with a fixed set of sampling patterns stored in a read-only memory (*e.g., the memory for the pattern table storing the sampling patterns; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8-10, 11-12; 13-14)*, the sampling pattern for a given pixel determined by a calculation based upon the row and/or column containing the pixel (it is apparent that sampling patterns to be stored in a read-only memory; see a plurality of sampling patterns in *Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*); and

Calculating values for pixels of the image from respective calculated sample values (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 64:

(1) Sato teaches a method for calculating values for pixels of an image having pixels arranged in rows and columns parallel to first and second perpendicular axes, respectively, comprising:

Calculating sample values for pixels of the image in accordance with a fixed set of sampling patterns stored in a read-only memory (*e.g., the memory for the pattern table storing the sampling patterns; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8-10, 11-12; 13-14*), selecting one sampling pattern from the set of sampling patterns to be applied for calculating sample values for a given pixel (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*); and

Calculating values for pixels of the image from respective calculated sample values (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 67:

The claim 67 encompasses the same scope of invention as that of claim 64 except additional claimed limitation that selection of the one sampling pattern is made based on the sampling patterns selected from calculating sample values for pixels in the same row or column as the given pixel. Sato further discloses the claimed limitation that selection of the one sampling pattern is made based on the sampling patterns selected from calculating sample values for pixels in the same row or column as the given pixel (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8-10, 11-12; 13-14*).

Claim 68:

The claim 68 encompasses the same scope of invention as that of claim 64 except additional claimed limitation that selection of the one sampling pattern is made based on the row and/or column in which the given pixel lies. Sato further discloses the claimed limitation that

selection of the one sampling pattern is made based on the row and/or column in which the given pixel lies (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 69:

The claim 69 encompasses the same scope of invention as that of claim 68 except additional claimed limitation that the sampling patterns define sampling locations substantially at the center of one or more of sixteen different regions, the sixteen regions evenly arranged in a four-by-four array of regions, each region having the same shape and size.

Sato further discloses the claimed limitation that selection that the sampling patterns define sampling locations substantially at the center of one or more of sixteen different regions, the sixteen regions evenly arranged in a four-by-four array of regions, each region having the same shape and size (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

9. Claim 70:

Sato teaches a method for calculating values for pixels of an image having the pixels arranged in rows and columns parallel to first and second perpendicular axes, respectively, comprising:

Shifting the sampling locations defined by one or more sampling patterns relative to a pixel (*"shifting" is realized by changing the sampling locations for a pixel according to the sampling pattern selected; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8-10, 11-12; 13-14*);

Calculating sample values for at least one pixel in accordance with the shifted sampling locations of a respective sampling pattern (*calculating the respective parameters of the stamps*

associated with a pixel and drawing the pixel according to the calculated value; see Figs. 22, 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14); and

Calculating values for pixels of the image from respective calculated sample values (*calculating the respective parameters of the stamps associated with a pixel and drawing the pixel according to the calculated value; see Figs. 22; 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 71:

The claim 71 encompasses the same scope of invention as that of claim 70 except additional claimed limitation that the one or more sampling patterns are stored into a writable memory, the sampling pattern applied depending upon those stored in the memory.

Sato further discloses the claimed limitation that selection that the one or more sampling patterns are stored into a writable memory (*e.g., the memory for the pattern table storing the sampling patterns; see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8-10, 11-12; 13-14)*, the sampling pattern applied depending upon those stored in the memory (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 76:

The claim 76 encompasses the same scope of invention as that of claim 70 except additional claimed limitation that at least one of the sampling patterns comprises a sampling pattern having four sample locations, the four sample locations arranged relative to a pixel within a region evenly divided into an array of 16 sub-regions in a manner whereby no two sample

locations are located in the same row, column, or diagonal of sub-regions where the sub-regions are considered as arranged into a four-by-four array of sub-regions.

Sato further discloses the claimed limitation that at least one of the sampling patterns comprises a sampling pattern having four sample locations, the four sample locations arranged relative to a pixel within a region evenly divided into an array of 16 sub-regions in a manner whereby no two sample locations are located in the same row, column, or diagonal of sub-regions where the sub-regions are considered as arranged into a four-by-four array of sub-regions (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 78:

The claim 78 encompasses the same scope of invention as that of claim 70 except additional claimed limitation that at least two of the sampling patterns is considered as dividing a given pixel into a four-by-four array of sub-pixels and four potential sample positions are arranged within the array in a manner where no two potential samples positions are located in the same row, column, or diagonal of sub-pixels, each of the two sampling patterns having two sampling positions from the four potential sampling positions, a first sampling pattern having sample locations in the first and fourth rows of the array and a second sampling pattern having sample locations in the second and third rows of the array.

Sato further discloses the claimed limitation that at least two of the sampling patterns is considered as dividing a given pixel into a four-by-four array of sub-pixels and four potential sample positions are arranged within the array in a manner where no two potential samples positions are located in the same row, column, or diagonal of sub-pixels, each of the two sampling patterns having two sampling positions from the four potential sampling positions, a

first sampling pattern having sample locations in the first and fourth rows of the array and a second sampling pattern having sample locations in the second and third rows of the array (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8-10, 11-12; 13-14*).

Claim 80:

The claim 80 encompasses the same scope of invention as that of claim 70 except additional claimed limitation that one sampling pattern is considered as dividing a given pixel into a four-by-four array of sub-pixels and four potential sample positions are arranged within the array in a manner where no two potential samples positions are located in the same row, column, or diagonal of sub-pixels, the sampling pattern having two sampling positions from the four potential sampling positions, the sampling pattern having sample locations in the first and fourth rows of the array.

Sato further discloses the claimed limitation that one sampling pattern is considered as dividing a given pixel into a four-by-four array of sub-pixels and four potential sample positions are arranged within the array in a manner where no two potential samples positions are located in the same row, column, or diagonal of sub-pixels, the sampling pattern having two sampling positions from the four potential sampling positions, the sampling pattern having sample locations in the first and fourth rows of the array (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 82:

The claim 82 encompasses the same scope of invention as that of claim 70 except additional claimed limitation that one sampling pattern is considered as dividing a given pixel into a four-by-four array of sub-pixels and four potential sample positions are arranged within

the array in a manner where no two potential samples positions are located in the same row, column, or diagonal of sub-pixels, the sampling pattern having two sampling positions from the four potential sampling positions, the sampling pattern having sample locations in the second and third rows of the array.

Sato further discloses the claimed limitation that one sampling pattern is considered as dividing a given pixel into a four-by-four array of sub-pixels and four potential sample positions are arranged within the array in a manner where no two potential samples positions are located in the same row, column, or diagonal of sub-pixels, the sampling pattern having two sampling positions from the four potential sampling positions, the sampling pattern having sample locations in the second and third rows of the array (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

Claim 84:

The claim 84 encompasses the same scope of invention as that of claim 70 except additional claimed limitation that one sampling pattern is considered as dividing a given pixel into a four-by-four array of sub-pixels and four potential sample positions are arranged within the array in a manner where no two potential samples positions are located in the same row, column, or diagonal of sub-pixels, the sampling pattern having two sampling positions from the four potential sampling positions.

Sato further discloses the claimed limitation that one sampling pattern is considered as dividing a given pixel into a four-by-four array of sub-pixels and four potential sample positions are arranged within the array in a manner where no two potential samples positions are located in the same row, column, or diagonal of sub-pixels, the sampling pattern having two sampling

positions from the four potential sampling positions (*see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8, 11-12; 13-14*).

10. Claims 86:

The claim 86 encompasses the same scope of invention as set forth in claim 1 except additional claimed limitation of an apparatus for rendering of an image. However, Sato further discloses the claimed limitation of an apparatus for rendering of an image (*see Figs. 2-22*).

11. Claims 88:

12. The claim 88 encompasses the same scope of invention as set forth in claim 20 except additional claimed limitation of an apparatus for rendering of an image. However, Sato further discloses the claimed limitation of an apparatus for rendering of an image (*see Figs. 2-22*).

13. Claim 91:

The claim 91 encompasses the same scope of invention as set forth in claim 27 except additional claimed limitation of an apparatus for rendering of an image. However, Sato further discloses the claimed limitation of an apparatus for rendering of an image (*see Figs. 2-22*).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claims 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. U.S. Pat. No. 6,731,301 (hereinafter Sato) in view of Wong et al. U.S. Pat. No. 6,501,483 (hereinafter Wong).

Re Claims 29-32:

The claims encompass the same scope of invention as that of claim 27 except additional claimed limitation of the first sampling rate being two samples per pixel and the second sampling rate being one sample per pixel.

Wong teaches at the block 542 of Fig. 7, selecting a sampling pattern from a plurality of sampling patterns shown in figures 5A-5L, and based on the super-sample pattern utilized, the location of the sub-pixel associated with each super-sample is determined according to the pattern shown in figures 5A-5L.

It would have been obvious to one of ordinary skill in the art to have incorporated the Wong's super-sampling patterns into the Sato's pattern table to select sampling patterns for pixels because Sato teaches selecting a sparse sampling pattern in accordance to the predetermined condition such as the selection by the random number generator or a pattern table (*see Sato Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8-10, 11-12; 13-14*) and therefore suggesting two different sampling patterns can be selected for consecutive pixels. Moreover, Wong teaches non-uniform sampling patterns and non-uniform pixel changes and further teaches that the determination of the appropriate super-sampling pattern to use is somewhat subjective (e.g., Wong column 5, lines 49-67) and therefore suggesting two different sampling patterns can be selected for consecutive pixels.

One having the ordinary skill in the art would have been motivated to do this because it would have provided a routine experimentation of the test sampling patterns to possibly reduce visible or invisible aliasing noise or to reduce signal to noise ratio by employing the alternating sampling patterns for the consecutive pixels (*see Sato Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8-10, 11-12; 13-14*).

16. Claims 65-66, 72-75, 77, 79, 81, 83, and 85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. U.S. Pat. No. 6,731,301 (hereinafter Sato) in view of Don P. Mitchell, "Generating Antialiased Images at Low Sampling Densities", Computer Graphics, Vol. 21, No. 4, July 1987, pp. 65-72 (hereinafter Mitchell).

Re Claims 65-66, 72-75, 77, 79, 81, 83, and 85:

The claims encompass additional claimed limitation of selecting the one sampling pattern comprising randomly selecting one sampling pattern from the plurality of patterns.

Sato is silent to the claimed limitation of selecting the one sampling pattern comprising randomly selecting one sampling pattern from the plurality of patterns.

However, Mitchell teaches a non-uniform or adaptive sampling patterns with variations in local sampling densities for super-sampling cells or pixel regions or pixels and the sampling pattern is randomly selected (e.g., Mitchell page 67-68).

To illustrate how Mitchell's teaching can be used to construct the sampling pattern for a given pixel determined by a calculation based upon the row and/or column containing the pixel, Mitchell discloses each new sampling location is generated if it falls outside a certain distance of

any previously chosen sampling locations in super-sampling (Mitchell page 66) and an offset can be added to the sample positions to generate new sampling pattern (Mitchell page 66). Mitchell further discloses a reconstruction filter which determines the number and locations of the sampling points and thereby determines the sampling pattern for each pixel because the filter kernel is pixel position and sampling location dependent (Mitchell page 67). Therefore, Mitchell teaches the sampling density can be constructed to change with respect to pixel positions in a way that can be determined by the filter kernel function of the pixel position. Therefore, by using the sampling location selection scheme or by the filter kernel selection, Mitchell's teaching may generate varying sampling densities such as the sampling pattern for a given pixel determined by a calculation based upon the row and/or column containing the pixel.

It would have been obvious to one of ordinary skill in the art to have incorporated the Mitchell's non-uniform or adaptive sampling for super-sampling cells into the Sato's invention to select sampling patterns for pixels because Sato teaches selecting a sparse sampling pattern in accordance to the predetermined condition such as the selection by the random number generator or a pattern table (see Figs. 26, 29, 34, 36, and 38; col. 2, 4, 8-10, 11-12; 13-14) and therefore suggesting two different sampling patterns can be selected for consecutive pixels. Moreover, while it is known to one of the ordinary skill in the art that super-sampling yields less aliasing, however, Applicant apparently fails to establish the criticality of the specific way of non-uniform or adaptive sampling using two different sampling patterns for consecutive pixels.

One having the ordinary skill in the art would have been motivated to do this because it would have provided a routine experimentation of the test sampling patterns to possibly reduce

visible or invisible aliasing noise or to reduce signal to noise ratio by employing the non-uniform sampling patterns for the different pixels (e.g., Mitchell page 66-68).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jin-Cheng Wang whose telephone number is (571) 272-7665. The examiner can normally be reached on 8:00 - 6:30 (Mon-Thu).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Razavi can be reached on (571) 272-7664. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jcw

Ryan Yang, P.E.